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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,274	09/13/2006	Hans-Jurgen Albrecht	H06020/PCT/US	3094
31217	7590	10/04/2011	EXAMINER	
Loctite Corporation One Henkel Way Rocky Hill, CT 06067			COHEN, STEFANIE J	
			ART UNIT	PAPER NUMBER
			1732	
			MAIL DATE	DELIVERY MODE
			10/04/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/554,274

Applicant(s)

ALBRECHT ET AL.

Examiner

STEFANIE COHEN

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 3,8,9,19 and 26 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 3,8,9,19 and 26 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Examiner acknowledges declaration received 7/1/2011.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 8-9, 19 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable by Gonya et al (5393489) in view of Ballentine et al (4758407).

Gonya, col.4 lines 20-25, teaches a high temperature, lead free, tin based solder composition comprising about 93.5- about 94 weight% Sn, about 2.5- about 3 weight% Ag, about 1- about 2 weight% Bi, 1-2 weight% Sb and appx 1 weight% Cu.

Further, Gonya teaches the Sb:Bi ratio ranges from .5-4.

Although Gonya teaches a high temperature, lead free, tin based solder composition, Gonya does not teach the composition comprising nickel.

Ballentine teaches a Pb- free tin base solder composition comprising 0-2% by weight of nickel.

Ballentine, col. 4 lines 40-45, teaches the addition of nickel, even in small amounts, is extremely effective in widening the melting range, improving wettability,

increasing strength and enhancing the ability to cap, i.e. form a small fillet, at the joint juncture.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the nickel amount as taught by Ballentine as the nickel amount as taught by Gonya because Ballentine teaches the addition of nickel, even in small amounts, is extremely effective in widening the melting range, improving wettability, increasing strength and enhancing the ability to cap, i.e. form a small fillet, at the joint juncture.

Gonya and Ballentine and the claims differ in that Gonya and Ballentine do not teach the exact same proportions as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the compositional proportions taught by Gonya and Ballentine overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

“The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages”, In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Response to Arguments

Applicant's arguments filed 7/1/2011 have been fully considered but they are not persuasive.

The Declaration under 37 CFR 1.132 filed July 1, 2011 is insufficient to overcome the rejection of the based upon Gonya et al (5393489) in view of Ballentine et al (4758407) as set forth in the last Office action because:

Figure A shows the impact of the addition of Bi to a SAC alloy and declaration states that someone skilled in the art would know that high levels of Bi above 2% would increase the risk of low melting temperature phases in the alloy. However present claim 1 is not limited to any particular amount of Bi and Gonya already teaches 1-2% Bi to meet claim 26.

Figure B shows the impact of the addition of Sb to a SAC alloy. However Goya already teaches 1-2% Sb which is within the claimed range of 1 to 3 wt%.

Figure C shows the impact of the addition of both Bi and Sb to a SAC alloy. However the Sb:Bi ratios shown do not appear to correspond to the claimed ratio range as showing convincing evidence of the significance of the claimed range.

Figure D shows the impact of the addition of Ni to a SAC alloy. However Ballentine already teaches that providing up to 2% by weight of nickel is extremely effective in widening the melting range, thus the shown impact is expected.

Figure E shows the impact of the addition of Ni+Bi to a SAC alloy. Present claim 1 is not limited to any particular amount of Bi or amount of Bi with respect to Ni and Gonya already teaches 1-2% Bi to meet claim 26.

Gonya teaches every element present in claim 3 except for Ni. These elements include a tin based solder composition comprising about 93.5- about 94 weight% Sn, about 2.5- about 3 weight% Ag, about 1- about 2 weight% Bi, 1-2 weight% Sb and approx 1 weight% Cu.

Since Gonya teaches all the elements except Ni, further evidence is needed on the impact of Ni to a SAC alloy further comprising Sb and Bi. Further, regarding the Sb:Bi ratio, further evidence would be needed on the impact of the ratio on the overall alloy properties.

Further, the declaration argues these data would suggest to someone skilled in the art, "such as myself," that SAC+Bi+Sb alloys as taught by the '489 patent would not be suitable to address the needs identified in the subject application, which are an alloy based on a SAC alloy that exhibits a comparatively low melting point while at the same time is designed for the highest possible usage temperatures of the solder joints being formed, particularly well-suited for microelectronic packaging and assembly applications.

Examiner respectfully traverses. The present claims are to a lead free soldering material. Therefore, examiner does not limit the prior art to any specific end use of the product.

Further, the claims are to a composition and do not teach any specific properties of the end use of the product specifically compared to other alloys.

Further, declaration states it was also surprising to observe a marked improvement in maximum operating temperature and a small reduction in soldering process temperature when Ni was added to an alloy of SAC+Bi+Sb.

Therefore, the declaration states the benefits of adding Ni to an alloy of SAC+Bi+Sb.

Turning to the arguments, applicant argues not only is a specific combination of six elements presented, but those six elements are also provided in defined ranges and in the case of the invention defined in Claim 3, a weight ratio between two of the elements is also set forth.

Further, evidence is needed on the benefits of an alloy with the present composition claims as compared to the range as taught in the prior art.

Applicant argues the '407 patent fails among other things to note in any of these embodiments the addition of Bi at all, again let alone in the amounts set forth in the pending claims.

Although this may be true, examiner solely uses this reference to show the benefits on incorporating Ni in a specific range into a tin solder.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEFANIE COHEN whose telephone number is (571)270-5836. The examiner can normally be reached on Monday through Thursday 9:3am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melvin Curtis Mayes can be reached on 5712721234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stefanie Cohen

9/26/2011

SC

September 30, 2011

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1732